

PATENT
Atty. Dkt. AMAT/5799/TCG/ALD/BG



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Wang, et al.

Serial No.: 10/084,767

Confirmation No.: UNKNOWN

Filed: February 26, 2002

For: Cyclical Deposition of Tungsten Nitride for Metal Oxide Gate Electrode

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Group Art Unit: UNKNOWN

Examiner: UNKNOWN

Assistant Commissioner for  
Patents  
Washington, D.C. 20231

**CERTIFICATE OF MAILING**  
37 CFR 1.8

I hereby certify that this correspondence is being deposited on  
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June 4 02 William B. Pitter  
Date Signature

Dear Sir:

## INFORMATION DISCLOSURE STATEMENT

The Applicants, and the Attorney who signs below on the basis of the information supplied by the inventor and the information in his file, submit herewith patents, publications, or other information of which they are aware, which may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR § 1.56.

While the information submitted in this Information Disclosure Statement may be material pursuant to 37 CFR § 1.56, it is not intended to constitute an admission that any patent, publication, or other information referred to therein is prior art for this invention unless specifically designated as such.

In accordance with 37 CFR § 1.97, this Information Disclosure Statement is not to be construed as a representation that a search has been made or that no other possibly material information as defined under 37 CFR § 1.56(a) exists.

The patents and/or publications submitted herewith are set forth on the attached Form PTO-1449.

If the sum of \$180.00 is due under 37 CFR § 1.17(p) pursuant to § 1.97, the Commissioner is hereby authorized to charge this fee, and any other fee necessary to make this submission timely, to the Deposit Account No. 20-0782/APPM/5799/BTP.


Respectfully submitted,



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|                                                                             |  |  |  |  |              |  |                   |  |
|-----------------------------------------------------------------------------|--|--|--|--|--------------|--|-------------------|--|
| U.S. Department of Commerce, Patent and Trademark Office                    |  |  |  |  | Docket No.   |  | Serial No.        |  |
| (PTO Form 1449 modified)                                                    |  |  |  |  | APPM/5799    |  | 10/084,767        |  |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b> |  |  |  |  | Applicant    |  | Confirmation No.: |  |
|                                                                             |  |  |  |  | Wang, et al. |  | Unknown           |  |
| (Use several sheets if necessary)                                           |  |  |  |  | Filing Date  |  | Group             |  |
| Examiner Unknown                                                            |  |  |  |  | 02/26/2002   |  | Unknown           |  |

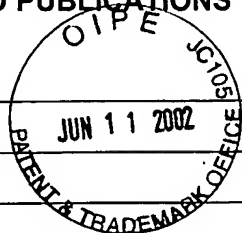


| U.S. Patent Documents |     |                 |            |                   |       |          |                            |
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| *Examiner Initial     |     | Document Number | Issue Date | Applicant(s) Name | Class | Subclass | Filing Date If Appropriate |
|                       | A1  | 4,058,430       | 11/15/77   | Suntola et al.    | 156   | 611      | 11/25/75                   |
|                       | A2  | 4,389,973       | 6/28/83    | Suntola et al.    | 118   | 725      | 12/11/81                   |
|                       | A3  | 4,413,022       | 11/1/83    | Suntola et al.    | 427   | 255.2    | 6/21/79                    |
|                       | A4  | 4,486,487       | 12/4/84    | Skarp             | 428   | 216      | 4/25/83                    |
|                       | A5  | 4,767,494       | 8/30/88    | Kobayashi et al.  | 156   | 606      | 9/19/86                    |
|                       | A6  | 4,806,321       | 2/21/89    | Nishizawa et al.  | 422   | 245      | 7/21/85                    |
|                       | A7  | 4,813,846       | 3/21/89    | Helms             | 414   | 744.1    | 4/29/87                    |
|                       | A8  | 4,829,022       | 5/9/89     | Kobayashi et al.  | 437   | 107      | 12/9/86                    |
|                       | A9  | 4,834,831       | 5/30/89    | Nishizawa et al.  | 156   | 611      | 9/4/87                     |
|                       | A10 | 4,838,983       | 6/13/89    | Schumaker et al.  | 156   | 613      | 3/18/88                    |
|                       | A11 | 4,838,993       | 6/13/89    | Aoki et al.       | 156   | 643      | 12/3/87                    |
|                       | A12 | 4,840,921       | 6/20/89    | Matsumoto         | 437   | 89       | 6/30/88                    |
|                       | A13 | 4,845,049       | 7/4/89     | Sunakawa          | 437   | 81       | 3/28/88                    |
|                       | A14 | 4,859,625       | 8/22/89    | Nishizawa et al.  | 437   | 81       | 11/20/87                   |
|                       | A15 | 4,859,627       | 8/22/89    | Sunakawa          | 437   | 81       | 7/1/88                     |
|                       | A16 | 4,861,417       | 8/29/89    | Mochizuki et al.  | 156   | 610      | 3/24/88                    |
|                       | A17 | 4,876,218       | 10/24/89   | Pessa et al.      | 437   | 107      | 9/26/88                    |
|                       | A18 | 4,917,556       | 4/17/90    | Stark et al.      | 414   | 217      | 5/26/89                    |
|                       | A19 | 4,927,670       | 5/22/90    | Erbil             | 427   | 255.3    | 6/22/88                    |
|                       | A20 | 4,931,132       | 6/5/90     | Aspnes et al.     | 156   | 601      | 10/7/88                    |
|                       | A21 | 4,951,601       | 8/28/90    | Maydan, et al.    | 118   | 719      | 6/23/89                    |
|                       | A22 | 4,960,720       | 10/2/90    | Shimbo            | 437   | 105      | 8/24/87                    |
|                       | A23 | 4,975,252       | 12/4/90    | Nishizawa et al.  | 422   | 245      | 5/26/89                    |
|                       | A24 | 4,993,357       | 2/19/91    | Scholz            | 118   | 715      | 12/21/89                   |
|                       | A25 | 5,000,113       | 3/19/91    | Wang et al.       | 118   | 723      | 12/19/86                   |
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|                                                                             |  | Wang, et al. | Unknown           |
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| Examiner Unknown                                                            |  | 02/26/2002   | Unknown           |

**U.S. Patent Documents**

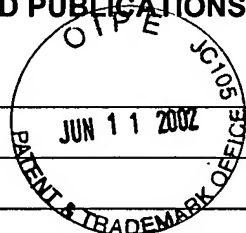
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|-------------------|-----|-----------------|------------|-------------------|-------|----------|----------------------------|
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|                   | A28 | 5,082,798       | 1/21/92    | Arimoto           | 437   | 108      | 9/27/90                    |
|                   | A29 | 5,085,885       | 2/4/92     | Foley et al.      | 477   | 38       | 9/10/90                    |
|                   | A30 | 5,091,320       | 2/25/92    | Aspnes et al.     | 437   | 8        | 6/15/90                    |
|                   | A31 | 5,130,269       | 7/14/92    | Kitahara et al.   | 437   | 111      | 4/25/89                    |
|                   | A32 | 5,166,092       | 11/24/92   | Mochizuki et al.  | 437   | 105      | 10/30/90                   |
|                   | A33 | 5,173,474       | 12/22/92   | Connell, et al.   | 505   | 1        | 3/11/91                    |
|                   | A34 | 5,186,718       | 2/16/93    | Tepman et al.     | 29    | 25.01    | 4/15/91                    |
|                   | A35 | 5,205,077       | 4/27/93    | Wittstock         | 51    | 165 R    | 8/28/91                    |
|                   | A36 | 5,225,366       | 7/6/93     | Yoder             | 437   | 108      | 6/22/90                    |
|                   | A37 | 5,234,561       | 8/10/93    | Randhawa et al.   | 204   | 192.38   | 8/25/88                    |
|                   | A38 | 5,246,536       | 9/21/93    | Nishizawa et al.  | 156   | 610      | 3/10/89                    |
|                   | A39 | 5,250,148       | 10/5/93    | Nishizawa et al.  | 156   | 611      | 11/12/91                   |
|                   | A40 | 5,254,207       | 10/19/93   | Nishizawa et al.  | 156   | 601      | 11/30/92                   |
|                   | A41 | 5,256,244       | 10/26/93   | Ackerman          | 156   | 613      | 2/10/92                    |
|                   | A42 | 5,259,881       | 11/9/93    | Edwards, et al.   | 118   | 719      | 5/17/91                    |
|                   | A43 | 5,270,247       | 12/14/93   | Sakuma et al.     | 437   | 133      | 7/8/92                     |
|                   | A44 | 5,278,435       | 1/11/94    | Van Hove et al.   | 257   | 184      | 6/8/92                     |
|                   | A45 | 5,281,274       | 1/25/94    | Yoder             | 118   | 697      | 2/4/93                     |
|                   | A46 | 5,286,296       | 2/15/94    | Sato et al.       | 118   | 719      | 1/9/92                     |
|                   | A47 | 5,290,748       | 3/1/94     | Knuuttila et al.  | 502   | 228      | 7/16/92                    |
|                   | A48 | 5,294,286       | 3/15/94    | Nishizawa et al.  | 156   | 610      | 1/12/93                    |
|                   | A49 | 5,296,403       | 3/22/94    | Nishizawa et al.  | 437   | 133      | 10/23/92                   |
|                   | A50 | 5,300,186       | 4/5/94     | Kitahara et al.   | 156   | 613      | 4/7/92                     |
|                   | A51 | 5,311,055       | 5/10/94    | Goodman et al.    | 257   | 593      | 11/22/91                   |
|                   | A52 | 5,316,615       | 5/31/94    | Copel             | 117   | 95       | 3/9/93                     |

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| Examiner Unknown                                                            |  | 02/26/2002   | Unknown           |

**U.S. Patent Documents**

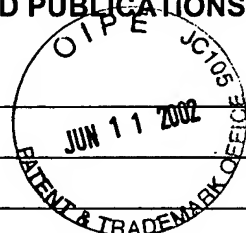
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|                   | A53 | 5,316,793       | 5/31/94    | Wallace et al.    | 427   | 248.1    | 7/27/92                    |
|                   | A54 | 5,330,610       | 7/19/94    | Eres et al.       | 117   | 86       | 5/28/93                    |
|                   | A55 | 5,336,324       | 8/9/94     | Stall et al.      | 118   | 719      | 12/4/91                    |
|                   | A56 | 5,338,389       | 8/16/94    | Nishizawa et al.  | 117   | 89       | 4/21/93                    |
|                   | A57 | 5,348,911       | 9/20/94    | Jurgensen et al.  | 117   | 91       | 4/26/93                    |
|                   | A58 | 5,374,570       | 12/20/94   | Nasu et al.       | 437   | 40       | 8/19/93                    |
|                   | A59 | 5,395,791       | 3/7/95     | Cheng et al.      | 437   | 105      | 10/20/93                   |
|                   | A60 | 5,438,952       | 8/8/95     | Otsuka            | 117   | 84       | 1/31/94                    |
|                   | A61 | 5,439,876       | 8/8/95     | Graf et al.       | 505   | 447      | 8/16/93                    |
|                   | A62 | 5,441,703       | 8/15/95    | Jurgensen         | 422   | 129      | 3/29/94                    |
|                   | A63 | 5,443,033       | 8/22/95    | Nishizawa et al.  | 117   | 86       | 3/11/94                    |
|                   | A64 | 5,443,647       | 8/22/95    | Aucoin et al.     | 118   | 723 ME   | 7/11/94                    |
|                   | A65 | 5,455,072       | 10/3/95    | Bension et al.    | 427   | 255.7    | 11/18/92                   |
|                   | A66 | 5,458,084       | 10/17/95   | Thorne et al.     | 117   | 89       | 12/9/93                    |
|                   | A67 | 5,469,806       | 11/28/95   | Mochizuki et al.  | 117   | 97       | 8/20/93                    |
|                   | A68 | 5,480,818       | 1/2/96     | Matsumoto et al.  | 437   | 40       | 2/9/93                     |
|                   | A69 | 5,483,919       | 1/16/96    | Yokoyama et al.   | 117   | 89       | 8/17/94                    |
|                   | A70 | 5,484,664       | 1/16/96    | Kitahara et al.   | 428   | 641      | 1/21/94                    |
|                   | A71 | 5,503,875       | 4/2/96     | Imai et al.       | 427   | 255.3    | 3/17/94                    |
|                   | A72 | 5,521,126       | 5/28/96    | Okamura et al.    | 437   | 235      | 6/22/94                    |
|                   | A73 | 5,527,733       | 6/18/96    | Nishizawa et al.  | 437   | 160      | 2/18/94                    |
|                   | A74 | 5,532,511       | 7/2/96     | Nishizawa et al.  | 257   | 627      | 3/23/95                    |
|                   | A75 | 5,540,783       | 7/30/96    | Eres et al.       | 118   | 725      | 5/26/94                    |
|                   | A76 | 5,580,380       | 12/3/96    | Liu, et al.       | 117   | 86       | 1/30/95                    |
|                   | A77 | 5,601,651       | 2/11/97    | Watabe            | 118   | 715      | 12/14/94                   |
|                   | A78 | 5,609,689       | 3/11/97    | Kato et al.       | 118   | 719      | 6/3/96                     |

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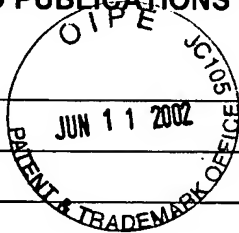
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|-------------------|------|-----------------|------------|-------------------|-------|----------|----------------------------|
|                   | A79  | 5,616,181       | 4/1/97     | Yamamoto et al.   | 118   | 723 ER   | 11/21/95                   |
|                   | A80  | 5,637,530       | 6/10/97    | Gaines et al.     | 114   | 105      | 6/10/96                    |
|                   | A81  | 5,641,984       | 6/24/97    | Aftergut et al.   | 257   | 433      | 8/19/94                    |
|                   | A82  | 5,644,128       | 7/1/97     | Wollnik et al.    | 250   | 251      | 8/25/94                    |
|                   | A83  | 5,667,592       | 9/16/97    | Boitnott et al.   | 118   | 719      | 4/16/96                    |
|                   | A84  | 5,674,786       | 10/7/97    | Turner et al.     | 437   | 225      | 6/5/95                     |
|                   | A85  | 5,693,139       | 12/2/97    | Nishizawa et al.  | 117   | 89       | 6/15/93                    |
|                   | A86  | 5,695,564       | 12/9/97    | Imahashi          | 118   | 719      | 8/3/95                     |
|                   | A87  | 5,705,224       | 1/6/98     | Murota et al.     | 427   | 248.1    | 1/31/95                    |
|                   | A88  | 5,707,880       | 1/13/98    | Aftergut et al.   | 437   | 3        | 1/17/97                    |
|                   | A89  | 5,711,811       | 1/27/98    | Suntola et al.    | 118   | 711      | 11/28/95                   |
|                   | A90  | 5,730,801       | 3/24/98    | Tepman et al.     | 118   | 719      | 8/23/94                    |
|                   | A91  | 5,730,802       | 3/24/98    | Ishizumi et al.   | 118   | 719      | 12/27/96                   |
|                   | A92  | 5,747,113       | 5/5/98     | Tsai              | 427   | 255.5    | 7/29/96                    |
|                   | A93  | 5,749,974       | 5/12/98    | Habuka et al.     | 118   | 725      | 7/13/95                    |
|                   | A94  | 5,788,447       | 8/4/98     | Yonemitsu et al.  | 414   | 217      | 8/5/96                     |
|                   | A95  | 5,788,799       | 8/4/98     | Steger, et al.    | 156   | 345      | 6/11/96                    |
|                   | A96  | 5,796,116       | 8/18/98    | Nakata et al.     | 257   | 66       | 7/25/95                    |
|                   | A97  | 5,801,634       | 9/1/98     | Young et al.      | 340   | 635      | 9/8/97                     |
|                   | A98  | 5,807,792       | 9/15/98    | Ilg et al.        | 438   | 758      | 12/18/96                   |
|                   | A99  | 5,830,270       | 11/3/98    | McKee et al.      | 117   | 106      | 8/5/96                     |
|                   | A100 | 5,835,677       | 11/10/98   | Li et al.         | 392   | 401      | 10/3/96                    |
|                   | A101 | 5,851,849       | 12/22/98   | Comizzoli et al.  | 438   | 38       | 5/22/97                    |
|                   | A102 | 5,855,675       | 1/5/99     | Doering et al.    | 118   | 719      | 3/3/97                     |
|                   | A103 | 5,855,680       | 1/5/99     | Soininen et al.   | 118   | 719      | 11/28/95                   |
|                   | A104 | 5,856,219       | 1/5/99     | Naito et al.      | 438   | 241      | 8/18/97                    |

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| Examiner Unknown                                                                     |  |                           |                              |

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|                   | A107 | 5,866,795       | 2/2/99     | Wang et al.       | 73    | 1.36     | 3/17/97                    |
|                   | A108 | 5,879,459       | 3/9/99     | Gadgil et al.     | 118   | 715      | 8/29/97                    |
|                   | A109 | 5,882,165       | 3/16/99    | Maydan et al.     | 414   | 217      | 9/10/97                    |
|                   | A110 | 5,882,413       | 3/16/99    | Beaulieu et al.   | 118   | 719      | 7/11/97                    |
|                   | A111 | 5,904,565       | 5/18/99    | Nguyen, et al.    | 438   | 687      | 7/17/97                    |
|                   | A112 | 5,916,365       | 6/29/99    | Sherman           | 117   | 92       | 8/16/96                    |
|                   | A113 | 5,923,056       | 7/13/99    | Lee et al.        | 257   | 192      | 3/12/98                    |
|                   | A114 | 5,923,985       | 7/13/99    | Aoki et al.       | 438   | 301      | 1/14/97                    |
|                   | A115 | 5,925,574       | 7/20/99    | Aoki et al.       | 437   | 31       | 4/10/92                    |
|                   | A116 | 5,928,389       | 7/27/99    | Jevtic            | 29    | 25.01    | 10/21/96                   |
|                   | A117 | 5,942,040       | 8/24/99    | Kim et al.        | 118   | 726      | 8/27/97                    |
|                   | A118 | 5,947,710       | 9/7/99     | Cooper, et al.    | 418   | 63       | 6/16/97                    |
|                   | A119 | 5,972,430       | 10/26/99   | DiMeo, Jr. et al. | 427   | 255.32   | 11/26/97                   |
|                   | A120 | 6,001,669       | 12/14/99   | Gaines et al.     | 438   | 102      | 7/21/92                    |
|                   | A121 | 6,015,590       | 1/18/00    | Suntola et al.    | 427   | 255.23   | 11/28/95                   |
|                   | A122 | 6,025,627       | 2/15/00    | Forbes et al.     | 257   | 321      | 5/29/98                    |
|                   | A123 | 6,036,773       | 3/14/00    | Wang et al.       | 117   | 97       | 3/27/97                    |
|                   | A124 | 6,042,652       | 3/28/00    | Hyun et al.       | 118   | 719      | 9/7/99                     |
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|                   | A126 | 6,051,286       | 4/18/00    | Zhao et al.       | 427   | 576      | 8/22/97                    |
|                   | A127 | 6,062,798       | 5/16/00    | Muka              | 414   | 416      | 6/13/96                    |
|                   | A128 | 6,071,808       | 6/6/00     | Merchant et al.   | 438   | 633      | 6/23/99                    |
|                   | A129 | 6,084,302       | 7/4/00     | Sandhu            | 257   | 751      | 12/26/95                   |
|                   | A130 | 6,086,677       | 7/11/00    | Umotoy et al.     | 118   | 715      | 6/16/98                    |

Examiner

Date Considered

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|                                                                                      |  |  |  |  |                           |  |                              |  |
|--------------------------------------------------------------------------------------|--|--|--|--|---------------------------|--|------------------------------|--|
| U.S. Department of Commerce, Patent and Trademark Office<br>(PTO Form 1449 modified) |  |  |  |  | Docket No.<br>APPM/5799   |  | Serial No.<br>10/084,767     |  |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b>          |  |  |  |  | Applicant<br>Wang, et al. |  | Confirmation No.:<br>Unknown |  |
| (Use several sheets if necessary)                                                    |  |  |  |  | Filing Date<br>02/26/2002 |  | Group<br>Unknown             |  |
| Examiner Unknown                                                                     |  |  |  |  |                           |  |                              |  |



| U.S. Patent Documents |      |                 |            |                   |       |          |                            |
|-----------------------|------|-----------------|------------|-------------------|-------|----------|----------------------------|
| *Examiner Initial     |      | Document Number | Issue Date | Applicant(s) Name | Class | Subclass | Filing Date If Appropriate |
|                       | A131 | 6,110,556       | 8/29/00    | Bang, et al.      | 428   | 64.1     | 10/17/97                   |
|                       | A132 | 6,113,977       | 9/5/00     | Soininen et al.   | 427   | 64       | 9/11/97                    |
|                       | A133 | 6,117,244       | 9/12/00    | Bang, et al.      | 118   | 715      | 3/24/98                    |
|                       | A134 | 6,124,158       | 9/26/00    | Dautartas et al.  | 438   | 216      | 6/8/99                     |
|                       | A135 | 6,130,147       | 10/10/00   | Major et al.      | 438   | 604      | 3/18/97                    |
|                       | A136 | 6,139,700       | 10/31/00   | Kang et al.       | 204   | 192.17   | 9/30/98                    |
|                       | A137 | 6,140,237       | 10/31/00   | Chan et al.       | 438   | 687      | 4/19/99                    |
|                       | A138 | 6,140,238       | 10/31/00   | Kitch             | 438   | 687      | 4/21/99                    |
|                       | A139 | 6,143,659       | 11/7/00    | Leem              | 438   | 688      | 8/27/98                    |
|                       | A140 | 6,144,060       | 11/7/00    | Park et al.       | 257   | 310      | 7/31/98                    |
|                       | A141 | 6,158,446       | 12/12/00   | Mohindra et al.   | 134   | 25.4     | 9/4/98                     |
|                       | A142 | 6,174,377       | 1/16/01    | Doering, et al.   | 118   | 729      | 1/4/99                     |
|                       | A143 | 6,174,809       | 1/16/01    | Kang, et al.      | 438   | 682      | 12/15/98                   |
|                       | A144 | 6,200,893       | 3/13/01    | Sneh              | 438   | 685      | 3/11/98                    |
|                       | A145 | 6,203,613       | 3/20/01    | Gates, et al.     | 117   | 104      | 10/19/99                   |
|                       | A146 | 6,206,967       | 3/27/01    | Mak, et al.       | 118   | 666      | 6/14/00                    |
|                       | A147 | 6,207,302       | 3/27/01    | Sugiura, et al.   | 428   | 690      | 3/2/98                     |
|                       | A148 | 6,248,605       | 6/19/01    | Harkonen, et al.  | 438   | 29       | 6/2/99                     |
|                       | A149 | 6,270,572       | 8/7/01     | Kim, et al.       | 117   | 93       | 8/9/99                     |
|                       | A150 | 6,271,148       | 8/7/01     | Kao et al.        | 438   | 727      | 10/13/99                   |
|                       | A151 | 6,287,965       | 9/11/01    | Kang, et al.      | 438   | 648      | 2/23/00                    |
|                       | A152 | 6,291,876       | 9/18/01    | Stumborg, et al.  | 257   | 632      | 8/20/98                    |
|                       | A153 | 6,305,314       | 10/23/01   | Sneh, et al.      | 118   | 723 R    | 12/17/99                   |
|                       | A154 | 6,306,216       | 10/23/01   | Kim, et al.       | 118   | 725      | 7/12/00                    |
|                       | A155 | 6,316,098       | 11/13/01   | Yitzchaik, et al. | 428   | 339      | 3/23/99                    |
|                       | A156 | 2001/0042799    | 11/22/01   | Kim, et al.       | 239   | 553      | 2/2/01                     |

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|-----------------------------------------------------------------------------|------------------|--------------|-------------------|
| U.S. Department of Commerce, Patent and Trademark Office                    |                  | Docket No.   | Serial No.        |
| (PTO Form 1449 modified)                                                    |                  | APPM/5799    | 10/084,767        |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b> |                  | Applicant    | Confirmation No.: |
|                                                                             |                  | Wang, et al. | Unknown           |
| (Use several sheets if necessary)                                           |                  | Filing Date  | Group             |
|                                                                             | Examiner Unknown | 02/26/2002   | Unknown           |

## U.S. Patent Documents

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| U.S. Department of Commerce, Patent and Trademark Office<br>(PTO Form 1449 modified) |  |  |  |  | Docket No.<br>APPM/5799   |  | Serial No.<br>10/084,767     |  |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b>          |  |  |  |  | Applicant<br>Wang, et al. |  | Confirmation No.:<br>Unknown |  |
| (Use several sheets if necessary)                                                    |  |  |  |  | Filing Date<br>02/26/2002 |  | Group<br>Unknown             |  |
| Examiner Unknown                                                                     |  |  |  |  |                           |  |                              |  |

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| Foreign Patent Documents |      |                 |             |         |       |          |                                     |                                     |
|--------------------------|------|-----------------|-------------|---------|-------|----------|-------------------------------------|-------------------------------------|
| *Examiner Initial        |      | Document Number | Date        | Country | Class | Subclass | Translation                         |                                     |
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|                          | B3   | 0 429 270 A2    | 5/29/91     | EP      | G03F  | Jul-36   | <input type="checkbox"/>            | <input type="checkbox"/>            |
|                          | B4   | 0 799 641 A2    | 10/8/97     | EP      | B01J  | 20/32    | <input type="checkbox"/>            | <input type="checkbox"/>            |
|                          | B5   | 0 442 290 A1    | 2/14/91     | EP      | C30B  | 25/02    | <input type="checkbox"/>            | <input type="checkbox"/>            |
|                          | B6   | 0 344 352 A1    | 6/3/88      | EP      | H01L  | 39/24    | <input type="checkbox"/>            | <input type="checkbox"/>            |
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|                          | B9   | 2 355 727A      | 05/02/12001 | GB      | C23C  | 16/44    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
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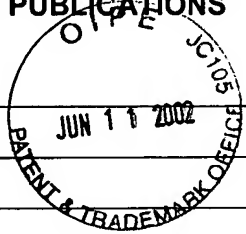
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| U.S. Department of Commerce, Patent and Trademark Office<br>(PTO Form 1449 modified) |  |  |  |  | Docket No.<br>APPM/5799   |  | Serial No.<br>10/084,767     |  |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b>          |  |  |  |  | Applicant<br>Wang, et al. |  | Confirmation No.:<br>Unknown |  |
| (Use several sheets if necessary)                                                    |  |  |  |  | Filing Date<br>02/26/2002 |  | Group<br>Unknown             |  |
| Examiner Unknown                                                                     |  |  |  |  |                           |  |                              |  |

| Foreign Patent Documents |     |                 |          |         |       |          |                                     |                          |
|--------------------------|-----|-----------------|----------|---------|-------|----------|-------------------------------------|--------------------------|
| *Examiner Initial        |     | Document Number | Date     | Country | Class | Subclass | Translation                         |                          |
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|                          | B30 | 64-009896       | 1/13/89  | JP      | C30B  | 29/40    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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|                          | B41 | 01-143221       | 6/5/89   | JP      | H01L  | 21/314   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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|                          | B46 | 01-264218       | 10/20/89 | JP      | H01L  | 21/205   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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| Examiner | Date Considered |
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|-----------------------------------------------------------------------------|--|--|--|--|--------------|--|-------------------|--|
| U.S. Department of Commerce, Patent and Trademark Office                    |  |  |  |  | Docket No.   |  | Serial No.        |  |
| (PTO Form 1449 modified)                                                    |  |  |  |  | APPM/5799    |  | 10/084,767        |  |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b> |  |  |  |  | Applicant    |  | Confirmation No.: |  |
|                                                                             |  |  |  |  | Wang, et al. |  | Unknown           |  |
| (Use several sheets if necessary)                                           |  |  |  |  | Filing Date  |  | Group             |  |
| Examiner Unknown                                                            |  |  |  |  | 02/26/2002   |  | Unknown           |  |

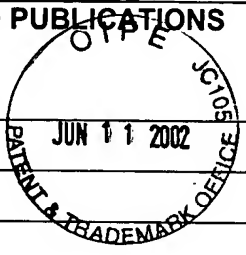


| Foreign Patent Documents |     |                    |          |         |       |          |                                     |                          |
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| *Examiner<br>Initial     |     | Document<br>Number | Date     | Country | Class | Subclass | Translation                         |                          |
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|                          | B50 | 01-290222          | 11/22/89 | JP      | H01L  | 21/205   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|                          | B51 | 01-296673          | 11/30/89 | JP      | H01L  | 29/88    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|                          | B52 | 01-303770          | 12/7/89  | JP      | H01L  | 39/24    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|                          | B53 | 01-305894          | 12/11/89 | JP      | C30B  | 23/08    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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|                          | B55 | 02-012814          | 1/17/90  | JP      | H01L  | 21/205   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|                          | B56 | 02-014513          | 1/18/90  | JP      | H01L  | 21/205   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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| Examiner | Date Considered |
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| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b>          |  |  |  |  | Applicant<br>Wang, et al. |  | Confirmation No.:<br>Unknown |  |
| (Use several sheets if necessary)                                                    |  |  |  |  | Filing Date<br>02/26/2002 |  | Group<br>Unknown             |  |
| Examiner Unknown                                                                     |  |  |  |  |                           |  |                              |  |



| Foreign Patent Documents |     |                 |          |         |       |          |                                     |                                     |
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|                          | B95 | 04-186824       | 7/3/92   | JP      | H01L  | 21/205   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
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|          |                 |
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| Examiner | Date Considered |
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.

|                                                                             |  |              |                   |
|-----------------------------------------------------------------------------|--|--------------|-------------------|
| U.S. Department of Commerce, Patent and Trademark Office                    |  | Docket No.   | Serial No.        |
| (PTO Form 1449 modified)                                                    |  | APPM/5799    | 10/084,767        |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b> |  | Applicant    | Confirmation No.: |
|                                                                             |  | Wang, et al. | Unknown           |
| (Use several sheets if necessary)                                           |  | Filing Date  | Group             |
| Examiner Unknown                                                            |  | 02/26/2002   | Unknown           |

**Foreign Patent Documents**

| *Examiner Initial |      | Document Number | Date     | Country | Class | Subclass | Translation                         |                          |
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Examiner

Date Considered

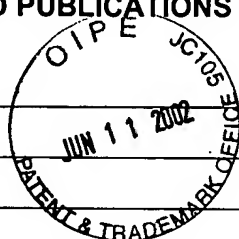
\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.

| U.S. Department of Commerce, Patent and Trademark Office                                                                                                                                                                                         |      |                    |          | Docket No.   |                 | Serial No.        |                                     |                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------|----------|--------------|-----------------|-------------------|-------------------------------------|-------------------------------------|
| (PTO Form 1449 modified)                                                                                                                                                                                                                         |      |                    |          | APPM/5799    |                 | 10/084,767        |                                     |                                     |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b>                                                                                                                                                                      |      |                    |          | Applicant    |                 | Confirmation No.: |                                     |                                     |
|                                                                                                                                                                                                                                                  |      |                    |          | Wang, et al. |                 | Unknown           |                                     |                                     |
| (Use several sheets if necessary)                                                                                                                                                                                                                |      |                    |          | Filing Date  |                 | Group             |                                     |                                     |
| Examiner Unknown                                                                                                                                                                                                                                 |      |                    |          | 02/26/2002   |                 | Unknown           |                                     |                                     |
| <b>Foreign Patent Documents</b>                                                                                                                                                                                                                  |      |                    |          |              |                 |                   |                                     |                                     |
| *Examiner<br>Initial                                                                                                                                                                                                                             |      | Document<br>Number | Date     | Country      | Class           | Subclass          | Translation                         |                                     |
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| Examiner                                                                                                                                                                                                                                         |      |                    |          |              | Date Considered |                   |                                     |                                     |
| <p>*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.</p> |      |                    |          |              |                 |                   |                                     |                                     |

| U.S. Department of Commerce, Patent and Trademark Office                                                                                                                                                                                  |      |                    |          |         | Docket No.      |          | Serial No.                          |                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------|----------|---------|-----------------|----------|-------------------------------------|-------------------------------------|
| (PTO Form 1449 modified)                                                                                                                                                                                                                  |      |                    |          |         | APPM/5799       |          | 10/084,767                          |                                     |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b>                                                                                                                                                               |      |                    |          |         | Applicant       |          | Confirmation No.:                   |                                     |
|                                                                                                                                                                                                                                           |      |                    |          |         | Wang, et al.    |          | Unknown                             |                                     |
| (Use several sheets if necessary)                                                                                                                                                                                                         |      |                    |          |         | Filing Date     |          | Group                               |                                     |
| Examiner Unknown                                                                                                                                                                                                                          |      |                    |          |         | 02/26/2002      |          | Unknown                             |                                     |
| <b>Foreign Patent Documents</b>                                                                                                                                                                                                           |      |                    |          |         |                 |          |                                     |                                     |
| *Examiner<br>Initial                                                                                                                                                                                                                      |      | Document<br>Number | Date     | Country | Class           | Subclass | Translation                         |                                     |
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| Examiner                                                                                                                                                                                                                                  |      |                    |          |         | Date Considered |          |                                     |                                     |
| *EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant. |      |                    |          |         |                 |          |                                     |                                     |



|                                                                             |  |              |                   |
|-----------------------------------------------------------------------------|--|--------------|-------------------|
| U.S. Department of Commerce, Patent and Trademark Office                    |  | Docket No.   | Serial No.        |
| (PTO Form 1449 modified)                                                    |  | APPM/5799    | 10/084,767        |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b> |  | Applicant    | Confirmation No.: |
|                                                                             |  | Wang, et al. | Unknown           |
| (Use several sheets if necessary)                                           |  | Filing Date  | Group             |
| Examiner Unknown                                                            |  | 02/26/2002   | Unknown           |

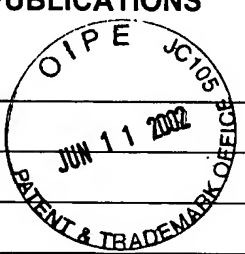
**Foreign Patent Documents**

| *Examiner<br>Initial |      | Document<br>Number | Date     | Country | Class | Subclass | Translation              |                                     |
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|                      | B190 | 01/27347 A1        | 4/19/01  | WO      | C23C  | 16/44    | <input type="checkbox"/> | <input type="checkbox"/>            |
|                      | B191 | 01/29280 A1        | 4/26/01  | WO      | H01L  | 21/00    | <input type="checkbox"/> | <input type="checkbox"/>            |
|                      | B192 | 01/29891 A1        | 4/26/01  | WO      | H01L  | 21/768   | <input type="checkbox"/> | <input type="checkbox"/>            |
|                      | B193 | 01/29893 A1        | 4/26/01  | WO      | H01L  | 21/768   | <input type="checkbox"/> | <input type="checkbox"/>            |
|                      | B194 | 01/36702 A1        | 5/25/01  | WO      | C23C  | 16/00    | <input type="checkbox"/> | <input type="checkbox"/>            |
|                      | B195 | 01/40541 A1        | 6/7/01   | WO      | C23C  | 16/40    | <input type="checkbox"/> | <input type="checkbox"/>            |
|                      | B196 | 01/66832 A2        | 9/13/01  | WO      | C23C  | 16/44    | <input type="checkbox"/> | <input type="checkbox"/>            |
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|                      |      |                    |          |         |       |          | <input type="checkbox"/> | <input type="checkbox"/>            |


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| U.S. Department of Commerce, Patent and Trademark Office<br>(PTO Form 1449 modified)                                                                                                                                                      |                                                      | Docket No.<br>APPM/5799                                                                                                                                                                                                                                   | Serial No.<br>10/084,767     |
| <b>SUPPLEMENTAL LIST OF PATENTS AND PUBLICATIONS<br/>CITED BY APPLICANT</b>                                                                                                                                                               |                                                      | Applicant<br>Wang, et al.                                                                                                                                                                                                                                 | Confirmation No.:<br>Unknown |
| (Use several sheets if necessary)                                                                                                                                                                                                         |                                                      | Filing Date<br>02/26/2002                                                                                                                                                                                                                                 | Group<br>Unknown             |
| Examiner                                                                                                                                                                                                                                  | Unknown                                              |                                                                                                                                                                                                                                                           |                              |
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| <b>OTHER ART</b>                                                                                                                                                                                                                          |                                                      |                                                                                                                                                                                                                                                           |                              |
| *Examiner Initial                                                                                                                                                                                                                         | Including Author, Title, Date, Pertinent Pages, Etc. |                                                                                                                                                                                                                                                           |                              |
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| (Use several sheets if necessary)                                                    |  | Filing Date<br>02/26/2002 | Group<br>Unknown             |
| Examiner Unknown                                                                     |  |                           |                              |

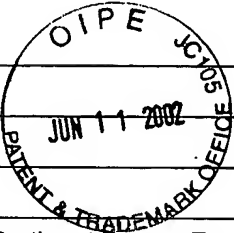


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|                   | C16 | Lee, "The Preparation of Titanium-Based Thin Film by CVD Using Titanium Chlorides as precursors", <i>Chemical Vapor Deposition</i> , 5(2) (Mar. 1999), pp. 69-73                                               |
|                   | C17 | Martensson, et al., "Atomic Layer Epitaxy of Copper, Growth & Selectivity in the Cu (II)-2,2,6,6-Tetramethyl-3, 5-Heptanedion ATE/H2 Process", <i>J. Electrochem. Soc.</i> , 145(8) (Aug. 1998), pp. 2926-2931 |
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|                   | C19 | Bedair, "Atomic layer epitaxy deposition processes", <i>J. Vac. Sci. Technol.</i> 12(1) (Jan/Feb 1994)                                                                                                         |
|                   | C20 | Yamaga, et al., "Atomic layer epitaxy of ZnS by a new gas supplying system in a low-pressure metalorganic vapor phase epitaxy", <i>J. of Crystal Growth</i> 117 (1992), pp. 152-155                            |
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|                   | C25 | IBM Tech. Disc. Bull. "Knowledge-Based Dynamic Scheduler in Distributed Computer Control, (June 1990), pp. 80-84                                                                                               |
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|                   | C27 | McGeachin, S., "Synthesis and properties of some $\beta$ -diketimines derived from acetylacetone, and their metal complexes", <i>Canadian J. of Chemistry</i> , Vol. 46 (1968), pp.1903-1912                   |
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|                   | C29 | NERAC.COM Retro Search: Atomic Layer Deposition of Copper, dated October 11, 2001                                                                                                                              |
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|                   | C31 | NERAC Search abstract of "Atomic Layer deposition of Ta and Ti for Interconnect Diffusion Barriers", by Rossnagel, et al., <i>J. Vac. Sci. &amp; Tech.</i> , 18(4) (July 2000)                                 |

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| (Use several sheets if necessary)                                                                                                                                                                                                         |         | Filing Date<br>02/26/2002                                                                                                                                                                           | Group<br>Unknown             |
| Examiner                                                                                                                                                                                                                                  | Unknown |                                                                                                                                                                                                     |                              |
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| <b>OTHER ART</b>                                                                                                                                                                                                                          |         |                                                                                                                                                                                                     |                              |
| *Examiner Initial                                                                                                                                                                                                                         |         | Including Author, Title, Date, Pertinent Pages, Etc.                                                                                                                                                |                              |
|                                                                                                                                                                                                                                           | C32     | Abstracts of articles re atomic layer deposition                                                                                                                                                    |                              |
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